ÄKTApurifier chromatography systems

High-performance purification and characterization of proteins, peptides and nucleic acids

Fast and easy start to purification

- method wizard for easy programming

Speed and reliability for every run

- fast optimization and peak identification, accurate result comparisons, improved peak purity, minimal procedure times with column knowledge built-in

Increased reproducibility every day

- automatic buffer preparation, evaluation and report procedures

Flexibility to change with your needs

- easy system modification
- increased productivity and throughput

ÄKTAdesign support

Introduction

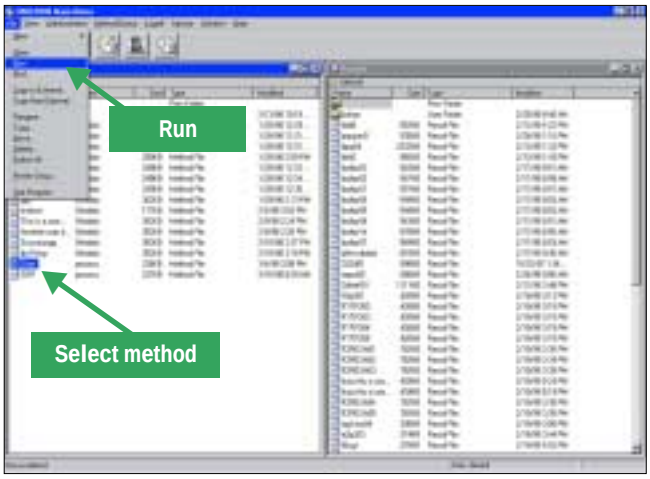
ÄKTA™purifier (Fig 1) is a liquid chromatography system designed for fast and reliable separations of proteins, peptides and nucleic acids.

ÄKTApurifier runs all chromatography techniques, from µg to mg scale at flow rates 0.001 ml/min – 10 ml/min and pressures 0–25 MPa or alternatively at flow rates 0.01–100 ml/min and pressures 0–10 MPa. With operational simplicity and the method wizard ÄKTApurifier incorporates many features to minimize preparation and run times and maximize reliability and reproducibility of results. ÄKTApurifier is essential to guarantee fast, reproducible runs everyday, as shown in Figure 2 and Figure 3.

Fig 1. ÄKTApurifier, from the ÄKTApurifier chromatography system series.

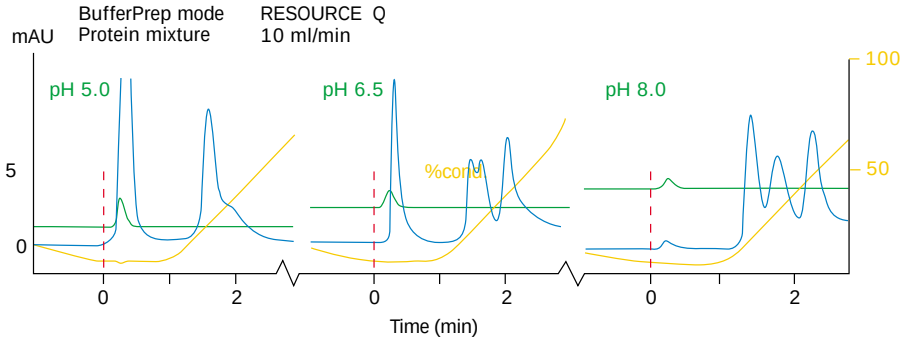
ÄKTApurifier systems are part of ÄKTAdesign, a range of liquid chromatography systems for academic and industrial research laboratories. ÄKTAdesign systems are controlled by UNICORN™ , a control, evaluation and reporting platform which also controls production systems at kilogram scale. Designed for Windows NT™/Windows 2000, UNICORN ensures quick, simple communication between systems and users and meets the stringent control and data handling procedures of modern laboratories. Optimized methods are transferred easily to production scale.

Amersham Biosciences



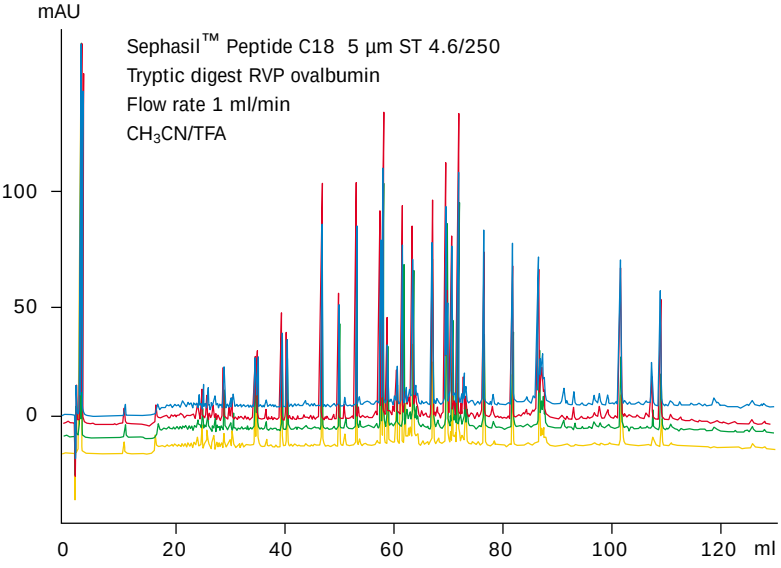
Fast and easy start to purification

Simple, direct start for any run



Speed and reliability for every run

Automatic pH scouting using BufferPrep



Increased reproducibility every day

Reproducible, high resolution results

Fig 2. Working with ÄKTApurifier–for the shortest route to a pure product

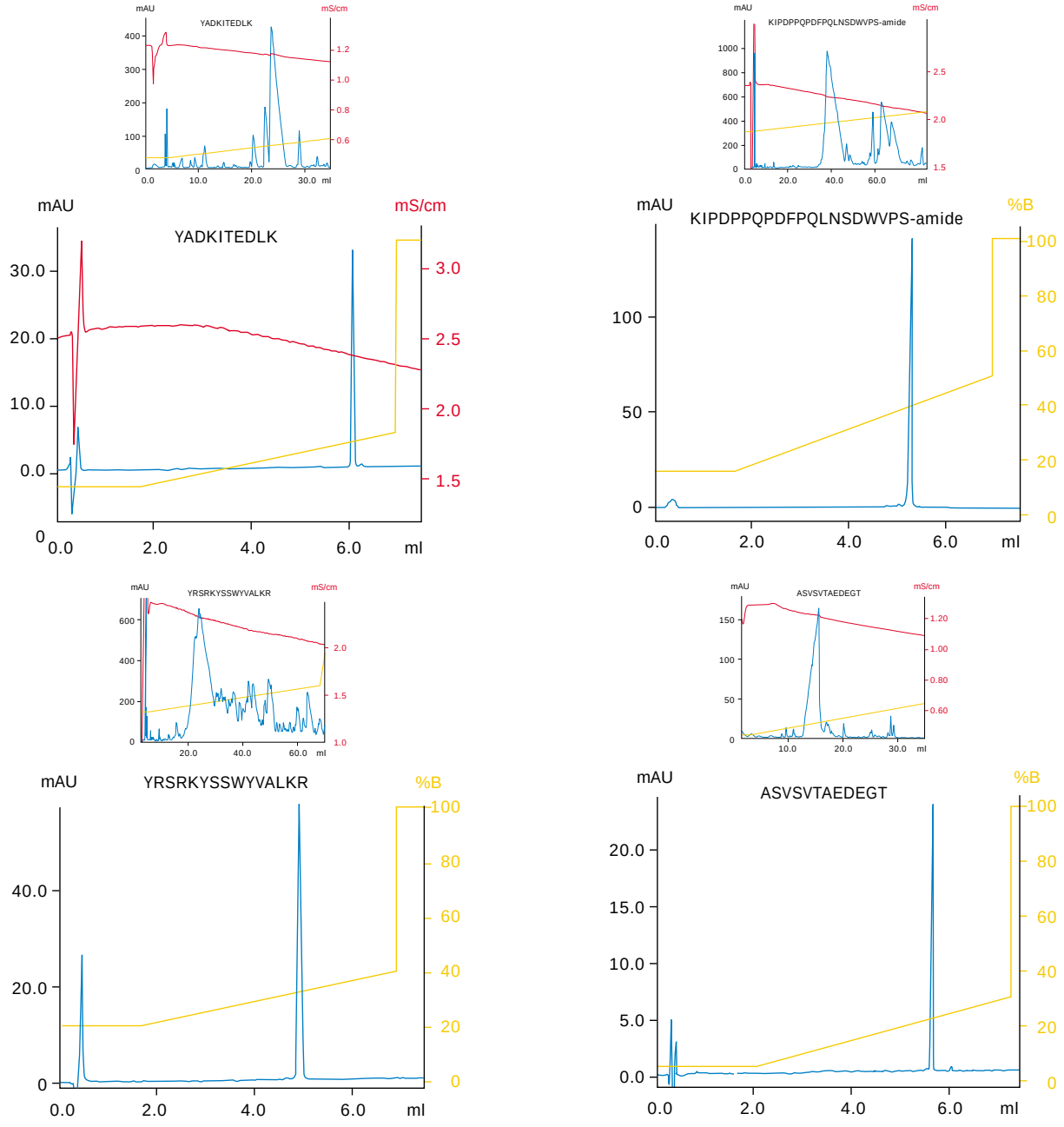


Fig 3. Purification of 4 peptides (small chromatograms) and purity analysis (large chromatograms) on one system using the experimental conditions below.

Examples shown are from a series of synthetic peptide purifications and analyses. Routine purity checks were speeded up using Autosampler A-900.

Experimental conditions

Purifications	Sephasil Peptide C18 5 µm ST 4.6/100 or 4.6/250
Crude material	1 ml/min, 214 nm
Purity analyses	µRPC C_2/C_{18} 3 µm SC2.1/100
Collected fractions	0.15 ml/min, 214 nm
Eluents	pH 2.5 CH_3CN/TFA: a_{ii}, b_i, c_i, c_{ii}, d_{ii}
	pH 7.0 CH_3CN/phosphate buffer: a_i, b_{ii}, d_i

Fast and easy start to purification

Users are able to create complete purification schemes for a range of biomolecules by using the method wizard. This makes ÄKTApurifier extremely easy to use and speeds up routine purifications. It reduces the need for expertise in programming, in chromatography and in time-consuming literature searches, as all this knowledge is built into ÄKTApurifier.

The method wizard in ÄKTApurifier provide a unique combination of flow configuration and methods support for all chromatographic techniques:

- Gel filtration (size exclusion) chromatography
- Anion exchange chromatography
- Cation exchange chromatography
- Hydrophobic interaction chromatography
- Affinity chromatography
- Reversed phase chromotography

The method wizard is based on extensive and well-documented work in our laboratories and can be used directly. Using input parameters as for example, components in use, flow rate, sample volume or gradient, the wizard builds up the method to fit your needs.

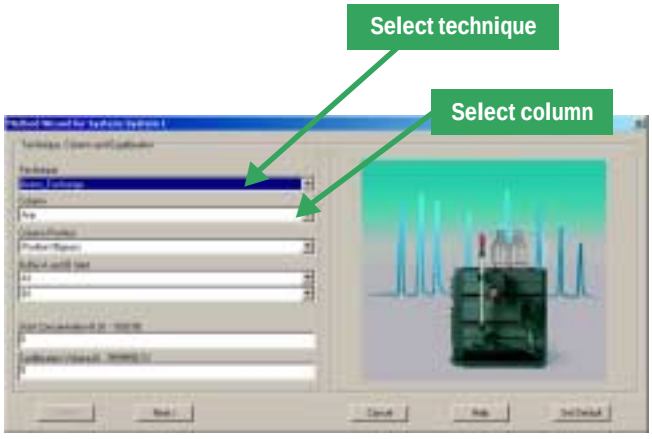


Fig 4. A new method is created in less than 3 min.

Each method created contains certain parameters as variables, e.g. flow rate, sample volume, column equilibration, for simple changes before each run if required (Fig 5).

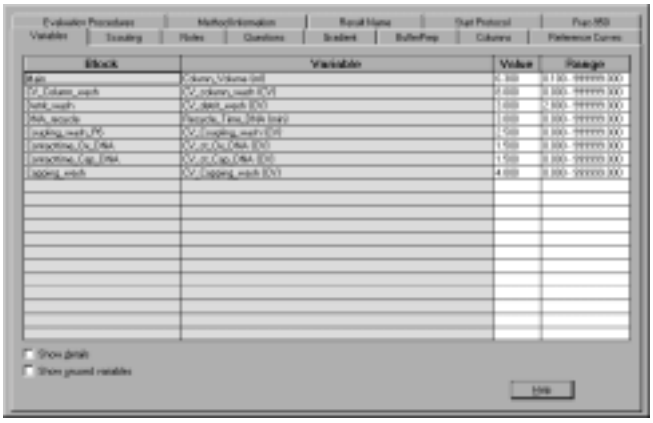


Fig 5. Simple input of chromatographic parameters.

The method wizard eliminate time consuming and repetitive method programming. The method wizard uses column volume as a programming base for easy use with any size of column. Figure 6 shows the simplicity of working with ÄKTApurifier systems once an established method is created and saved.

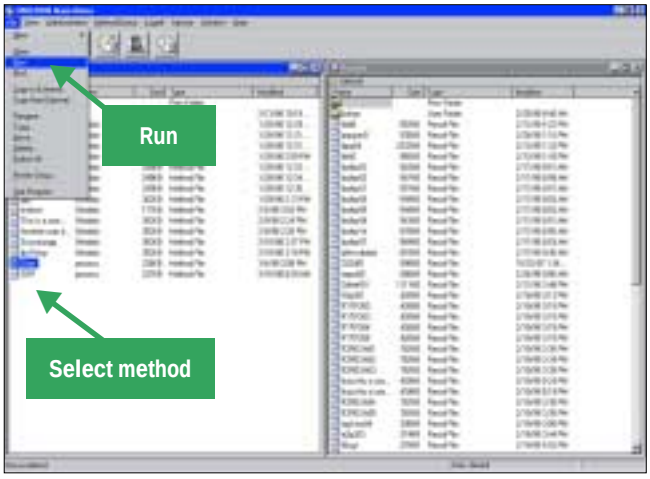


Fig 6. Start established method immediately.

Speed and reliability for every run

Routine runs quickly optimized

To quickly establish fast routine runs, the method wizard supports programming of method scouting (Fig 7). These scouting methods make it easy to systematically vary run parameters in repeated, automated procedures, reducing optimization times.

Fig 7. Automatic scouting during purification development and optimization. Example shows scouting for flow rate, sample volume, and gradient length.

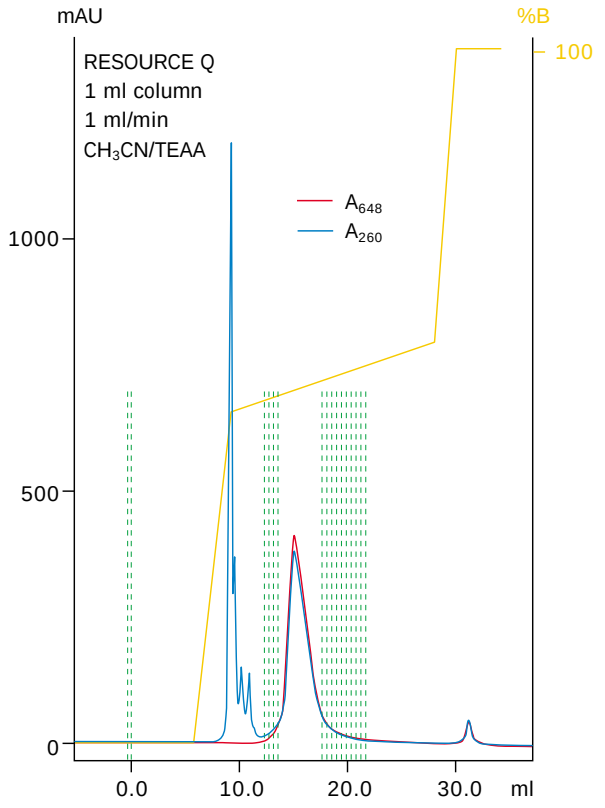


Fig 8. Purification and on-line detection of Cy™5-labelled (CyDye™) 20-mer oligonucleotide

Fast peak identification

User selected multi-wavelength monitoring enables on-line detection of specific labelled products (Fig 8) and can be used to detect contaminants at higher sensitivity wavelengths (e.g. 280/214/254 nm)

Accurate result comparisons

All data, including running conditions, are stored permanently for every run within the run log e.g. flow, pressure, UV, conductivity, temperature. This makes it extremely easy to compare runs and determine a cause for any deviations that may be seen.

Improved peak purity

Accurate peak fractionation can help to improve the purity of a selected peak. Figure 9 shows the accuracy of peak fractionation in ÄKTApurifier, by re-injection of daughter fractions from the original digest. Peak fractionation can be based on peak detection using *slope* or *level sensing*. Fraction marks and fraction numbers make it easy to identify fractions and peaks (Fig 8).

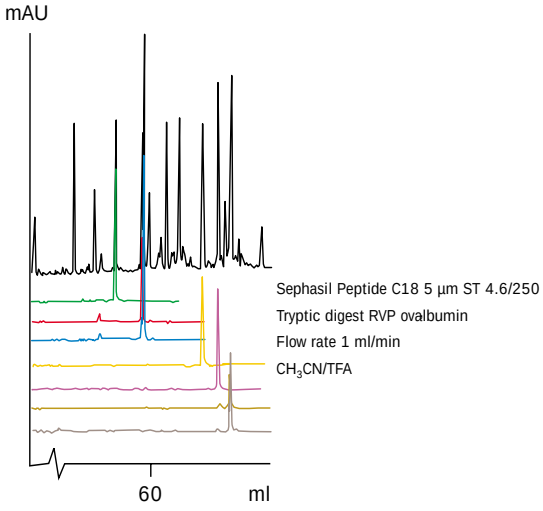


Fig 9. Accuracy of automatic peak fractionation in ÄKTApurifier.

Minimal procedure times

User selected and defined WATCH functions (Fig 10) are entered into a method to instruct specific events to occur when preset conditions are reached. For example, the WATCH function will wait for a return to normal baseline level before instructing the next run to begin, minimizing the time spent on column re-equilibration between runs.

Fig 10. User defined WATCH functions for improved automatic event control.

Column knowledge – built-in

ÄKTApurifier ensures every column is run optimally and is protected by ÄKTApurifier from damaging events such as over-pressure. The user selects a pre-packed column from the extensive column library (Fig 11) and ÄKTApurifier automatically sets the optimal running parameters for that column (e.g. column volume, flow rate and pressure limit) into the method. The user adjusts running conditions (if required) by simple method editing. New columns can be added to the library and will be run in the same secure way.

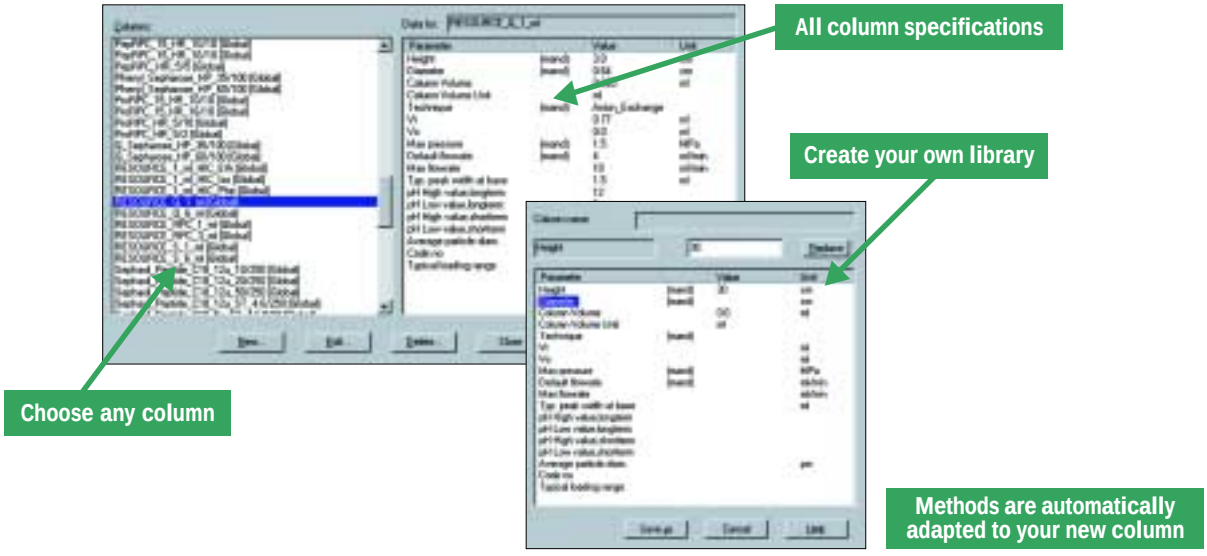

All column specifications
Create your own library
Choose any column
Methods are automatically adapted to your new column

Fig 11. Comprehensive column library ensures optimum running conditions.

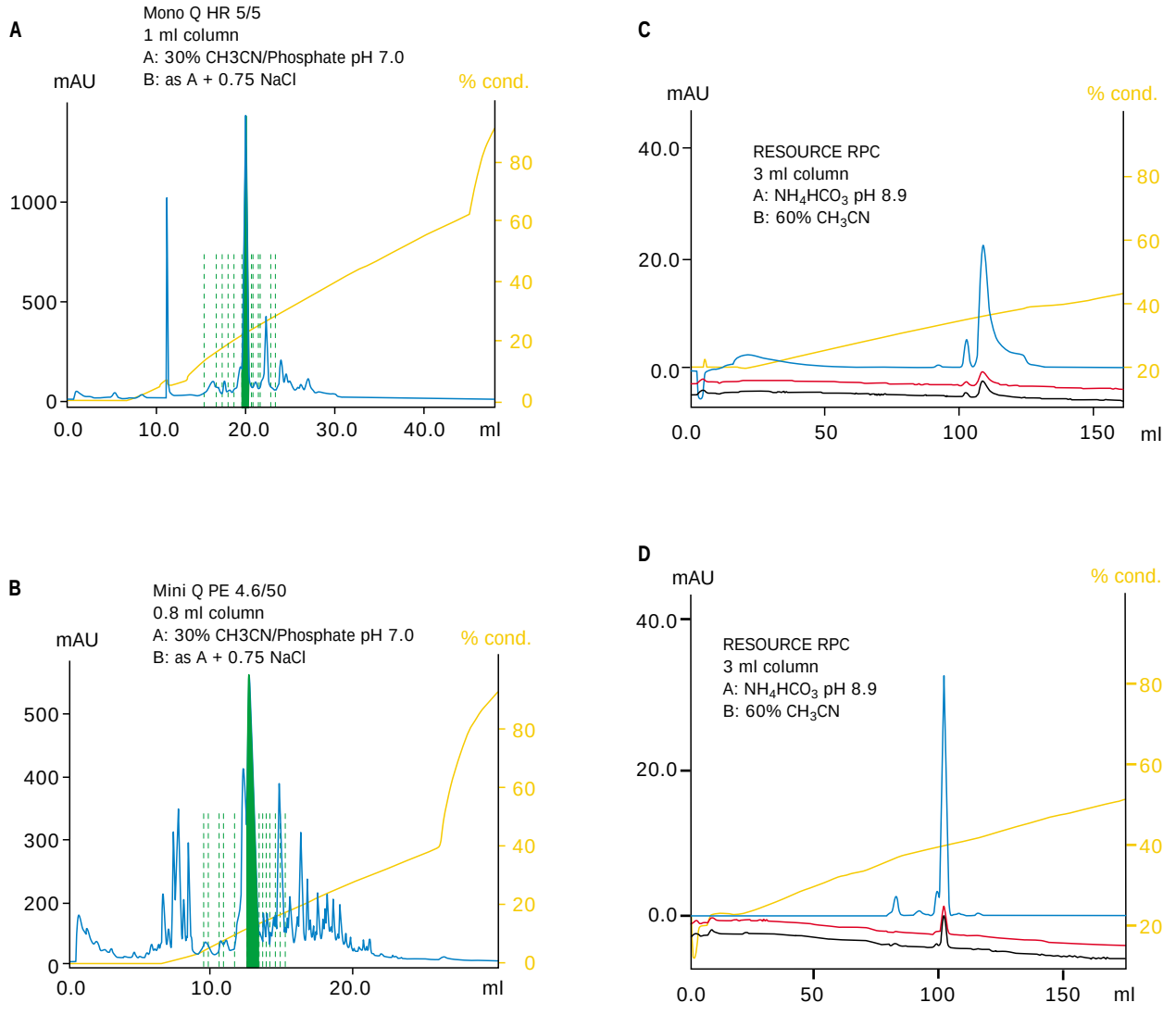


Fig 12. Two-step purification of a synthetic peptide using ion-exchange, with automatic peak fractionation. RPC is used for the final purification of the collected fractions.

The selection of the correct column for each purification step is essential for optimum results. Figure 12 shows the improved resolution of Mini Q™ (Fig 12B) compared to Mono Q™ (Fig 12A) yielding a higher purity product after only a single step, shown by the corresponding purity checks on RESOURCE™ RPC (Fig 12C and 12D). Optimum elution and accurate peak fractionation in ÄKTApurifier ensure a minimum number of purification steps.

Increased reliability and reproducibility from day to day

Accurate, automatic buffer preparation

The unique function, BufferPrep, eliminates the time-consuming manual buffer preparation and titration needed for every pH change in chromatography.

The user selects the buffers to be used from the buffer library and defines the pH required (Fig 13). BufferPrep prepares correct buffer pH on-line from four stock solutions (e.g. water, salt, buffer, acid/base) and controls the pH throughout the run, automatically compensating for changes in temperature and salt concentration. New buffer substances can be added to the buffer library and used by BufferPrep to create the required elution pH conditions

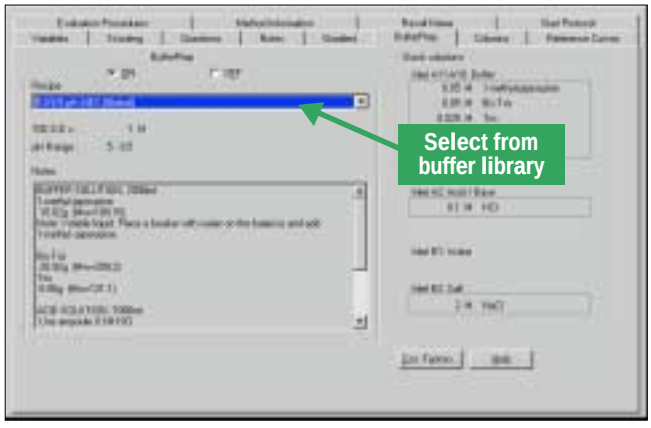


Fig 13. Simple programming for automatic buffer preparation.

The accuracy of pH is crucial in many separations, as shown in Figure 14. The accuracy of BufferPrep (Fig 15) greatly increases the reproducibility and reliability of results from day to day by eliminating and correcting errors which occur when producing buffers manually.

BufferPrep can be used for pH scouting in rapid method optimization. The method wizard makes programming of automatic eluent pH scouting for ion exchange chromatography easy and safe. Figure 16 shows BufferPrep used on ÄKTAexplorer 100 at 60 ml/min to test seven pH conditions to find the optimal pH for elution of a pure Fab fragment.

Automatic evaluation and reporting

ÄKTApurifier includes pre-programmed evaluation and report procedures which can be included within run methods. User- defined evaluation procedures and customized report layouts are quickly created (Fig 17).

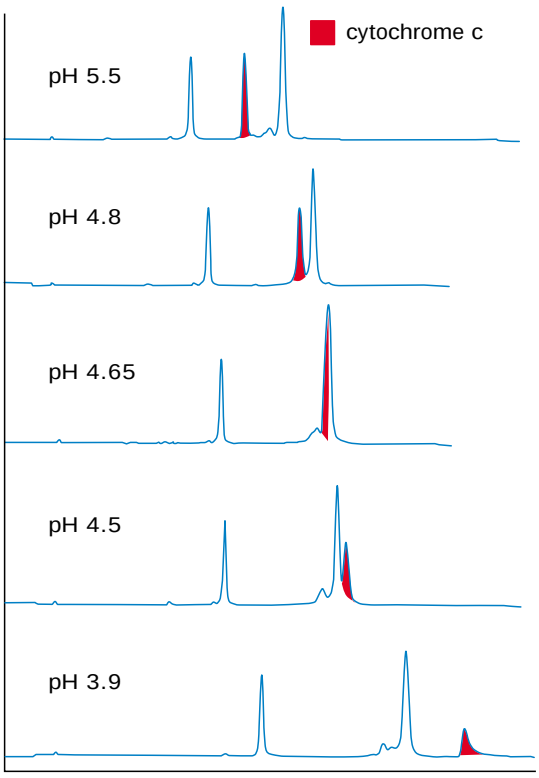


Fig 14. Small changes in pH significantly change chromatographic results. Above, a change of 0.15 pH units alters an elution profile.

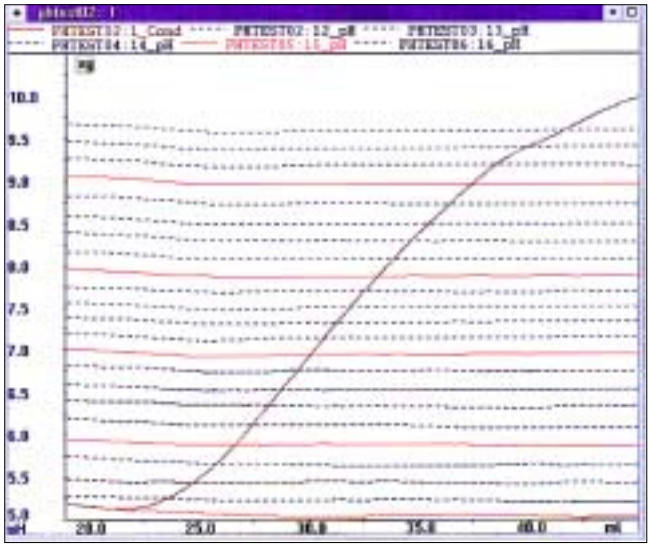


Fig 15. Constant pH, accurately maintained by BufferPrep, as salt concentration increases. Results shown from tests covering pH 5.3–9.7.

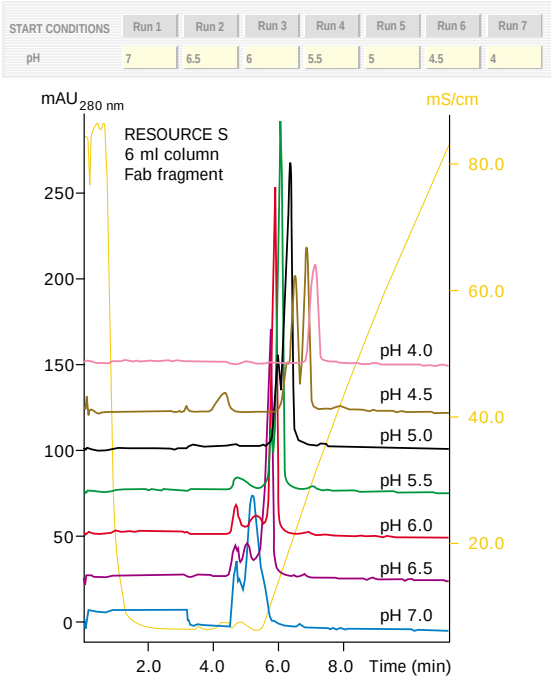


Fig 16. BufferPrep for automatic, rapid selection of pH.

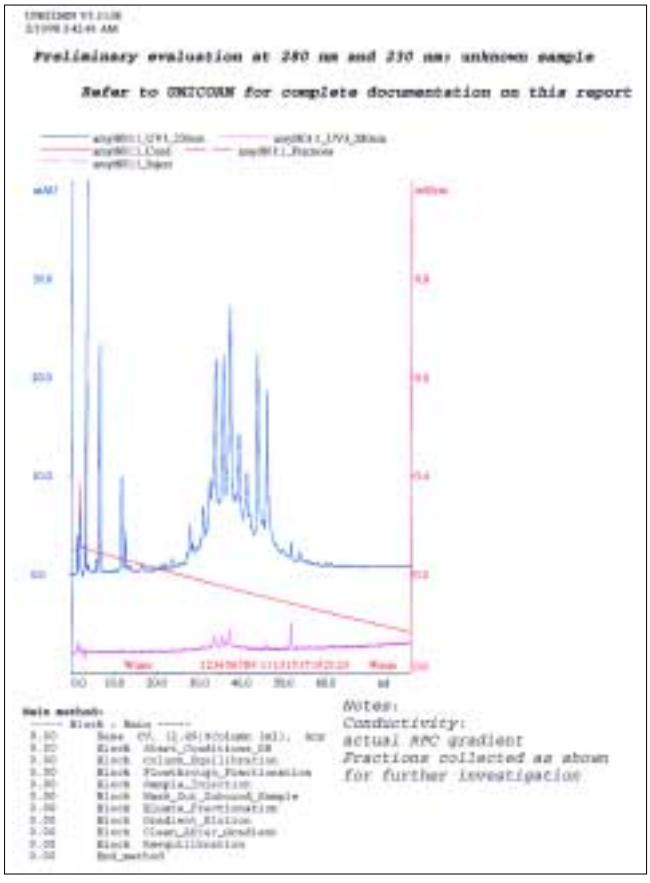

Preliminary evaluation at 280 nm and 230 nm; unknown sample
Refer to UNICORN for complete documentation on this report
Notes:
Conductivity:
actual RBC gradient
Fractions collected as shown
for further investigation

Fig 17. Automatic user defined evaluation and report procedures.

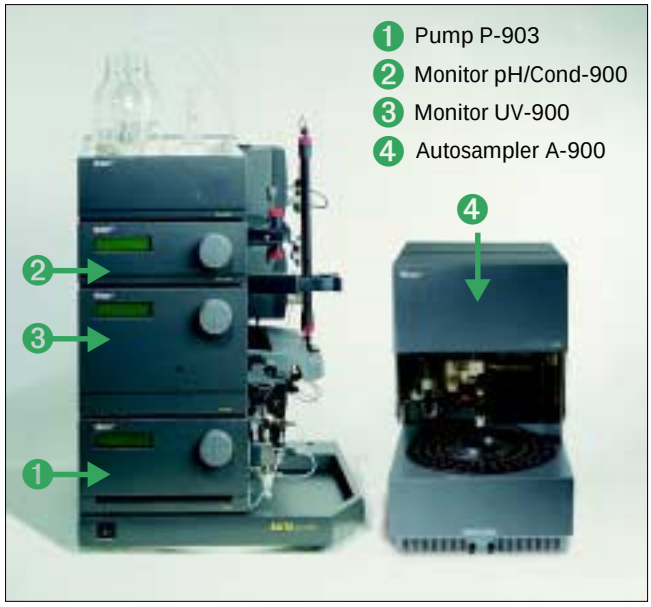


Fig 18. ÄKTApurifier 10XT for increased throughput.

To maximize productivity ÄKTApurifier 10XT is supplied with **Autosampler A-900** (Fig 18). This allows automatic injection of up to 96 samples from standard vials or 160 samples from micro-vials.

An extended evaluation package, UNICORN analysis module is included, providing:

- Quantification by internal or external standards
- Determination of molecular size by gel filtration
- Quantification of sample amount and sample concentration
- Recovery calculations

The autosampler is fully controlled through UNICORN control system and the method wizard includes the use of the autosampler in ÄKTApurifier 10XT, ensuring simple and easy start-up before leaving the system to run, evaluate, and report the samples automatically.

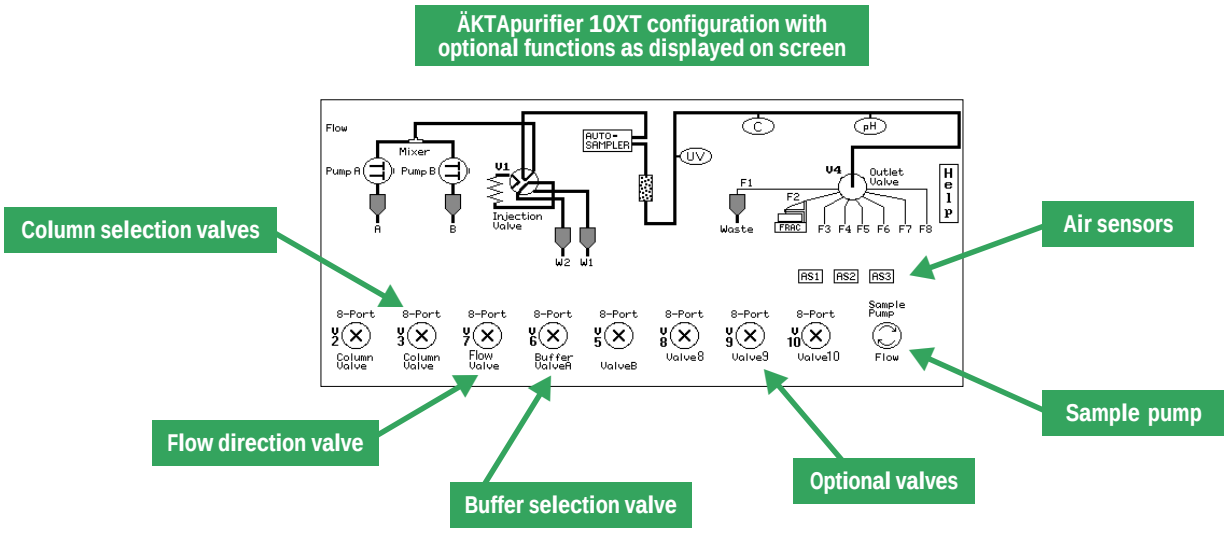


Fig 19. Additional equipment is easily added to an ÄKTApurifier chromatography system.

Easy system modification

New functions to enhance system capabilities or create new system configurations are easily added (Fig 19). Functions, consisting of hardware components and software instructions, are selected, installed and implemented by the user. UNICORN controls and monitors the new functions in the same way as all other ÄKTAdesign components. Further details of these optional functions are described on page 14 and include:

- Automatic sample application (large volumes or high throughput)
- Automatic column selection
- Automatic buffer selection
- Increased security for programmed events - using air sensors
- Flexible control of external equipment

ÄKTAdesign support

ÄKTAdesign networks

- Faster communication
- High security
- Complete overview of operations
- Maximum compliance with regulatory needs

UNICORN control system has full networking capability, with high security and maximum compliance with regulatory needs. Network support allows control of any ÄKTAdesign system from any connected UNICORN workstation (Fig 20).

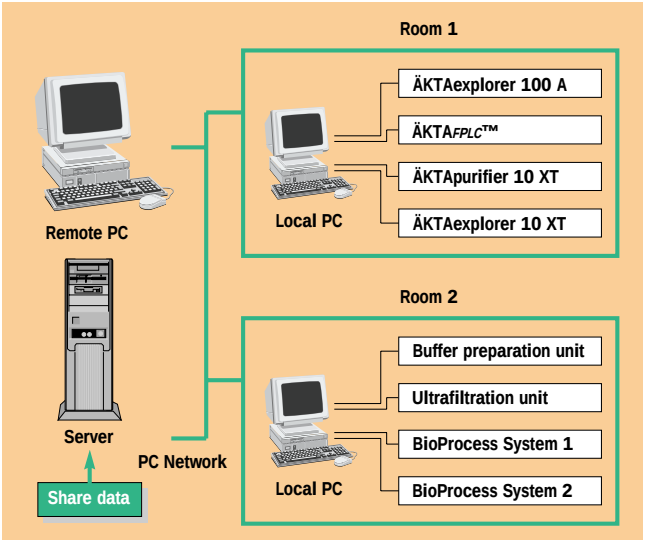


Fig 20. Users control and monitor chromatography systems from network-connected computers.

System control and data access via a PC network is extremely easy to use and gives complete overview of operations.

With defined access rights, operators connect to and control systems from any remote control or local PC. The user interface is exactly the same. Results can be automatically saved on a server and evaluation and generation of reports can be made locally or at remote PCs.

ÄKTAdesign service

- Controlled costs
- Traceable results
- Regulatory requirements support
- Maximum productivity
- Continuous operation at optimal performance

Regular, planned maintenance increases productivity by keeping a system in top working condition and minimising downtime. A service agreement lets users budget for all service and maintenance costs, giving full cost control and eliminating unexpected expenses.

Service agreements will greatly simplify compliance with regulatory and quality demands.

Scheduled preventive maintenance carried out by qualified engineers using traceable test equipment and the in-built service diagnostics of ÄKTAdesign, provide users with support to meet the requirements of Good Laboratory Practice (GLP).

ÄKTAdesign systems are supported with a comprehensive range of after-sales service agreements that can be customized to individual needs. All ÄKTAdesign instruments are supported in the laboratory by Labcrew™ equipment specialists (Fig 21). Labcrew is dedicated to minimizing operational disruption and ensuring functionality of ÄKTA equipment. Your local Amersham Biosciences representative will be pleased to discuss the options with you.

Fig 21. Labcrew specialists offer service support for all ÄKTAdesign instruments.

System description

General description

Fig 22. The swivel platform gives easy access to any side of the system.

Figure 22 shows an ÄKTApurifier chromatography system. All systems are supplied assembled and tested. Requiring minimal bench space, each system is mounted on a swivel platform for easy access to every side. Columns are snapped in place on the outside of the system, either individually or as groups held in column holders.

Figure 23 shows the configuration of ÄKTApurifier chromatography systems providing:

- easy pump wash for quick solvent exchange without disturbing the column
- automatic on-line buffer preparation from stock solutions
- automatic sample application
  - fixed volume loops from 100 µl to 1 ml, volumes smaller than 100 µl are applied by partial loop filling
  - Superloop™ 10 ml, Superloop 50 ml, and Superloop 150 ml for the range 1–10 ml, 1–50 ml and 1–150 ml respectively.
  - sample throughput is increased by the autosampler in ÄKTApurifier 10XT
- on-line UV-detection of up to three wavelengths simultaneously
- on-line monitoring of conductivity
- optional on-line monitoring of pH
- fraction collection options ranging from microtitre plates to large vessels
- routine, automated system wash

Flow configuration

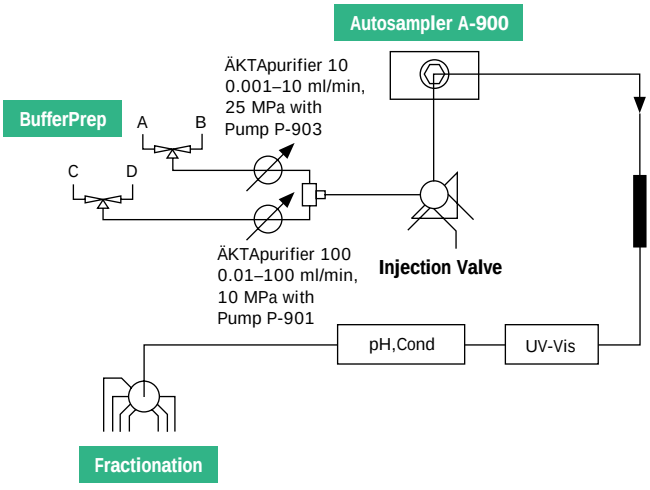


Fig 23. The flow configuration of ÄKTApurifier and ÄKTApurifier 10XT.

System control – UNICORN

UNICORN control system is used from laboratory to full scale production and allows real time control of ÄKTAdesign systems. As a single platform UNICORN ensures quick and simple communication between ÄKTAdesign systems and users. The same interface and methods used to run routine applications can be used to optimize a purification in research and development and applied at production scale.

UNICORN software is installed on the PC prior to delivery and controls all ÄKTAdesign instrument settings and functions.

For further information on the latest version of UNICORN system control, please contact your local Amersham Biosciences representative.

System components

ÄKTApurifier has three main instrument components, a number of ancillary items, and the option of a fraction collector and autosampler. All instrument settings and functions are under the direct control of UNICORN.

At every start-up, each instrument automatically performs a self-diagnostic test and calibrates appropriate settings. This ensures top performance throughout day-to-day operation.

All wetted materials are inert, fully biocompatible and resistant to all eluents commonly used in liquid chromatography, ensuring high recovery and no loss of biological activity.

Pumps P-901 and P-903

The P-900 series pumps have been designed to meet the needs of all chromatographers working with biomolecules. A unique new pump design has been developed to overcome many of the problems associated with traditional high performance pumping systems, and to produce accurate, reproducible flow and gradient formation over a wide flow rate range. The pressure and flow rate ranges covered by the two pumps are shown in Figure 24.
The wide flow rate range of Pump P-901 makes it suitable for both laboratory and pilot scale applications, running at optimal flow rates without changing pump modules or pump heads.

The lower flow rates and higher pressure specification of Pump P-903 are ideal for running laboratory scale separations and high-resolution analyses.

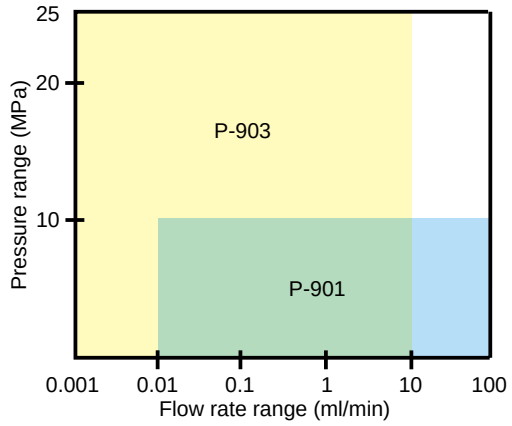


Fig. 24. Flow rates and pressure ranges of P-900 pumps.

Both pumps can be used for loading samples larger than 50 ml, but for easy, routine handling of large sample volumes the Sample Pump P-950 is recommended.

Further information: Please ask for Pump P-900 Series Data File No. 18-1119-49.

Monitor pH/Cond-900

Monitor pH/C-900 is a combined monitor for accurate, on-line monitoring of pH, conductivity and temperature recording real time information about chromatographic conditions.

An accurate response, coupled with high precision over a wide measuring range, make this monitor ideal for use in all chromatography techniques, from reversed phase with very low conductivity eluents to hydrophobic interaction chromatography in high salt solutions.

The pH/C-900 consists of a control unit, a flow cell for conductivity and temperature, a flow cell with a holder for the pH electrode and the pH electrode.

Further information: Please ask for Monitor pH/C-900 Data File No. 18-1111-19.

Monitor UV-900

Monitor UV-900 is a high sensitivity multi-wavelength UV-Vis monitor, recording up to three wavelengths simultaneously for optimal detection in the range 190–700 nm.

The use of advanced fibre optics together with the unique flow cell design ensures a high signal-to-noise ratio for maximum performance. Maintenance costs are minimized by use of a unique Xenon flash lamp, giving a siginificant increase in lamp lifetime.

ÄKTApurifer 100 systems include a UV-900 monitor with a 2 mm pathlength flow cell (internal volume 2 µl). The flow cell in ÄKTApurifer 10 systems has a pathlength 10 mm (internal volume 9 µl).

Further information: Please ask for Monitor UV-900 Data File No. 18-1111-17.

Ancillary equipment

Standard

Valves

ÄKTApurifier systems have one seven port injection valve, INV-907, for sample application and one eight port fractionation valve, IV-908, for diversion to fraction collector or waste. Two switch valves work together with a P-900 pump in BufferPrep mode.

Mixer M-925

Mixer M-925 is a dynamic, single chamber mixer powered and controlled from a P-900 pump. Each system is delivered with interchangeable mixing chambers to allow optimal mixing over the entire flow rate range (0.6 and 2 ml for ÄKTApurifier 10 and 2, 5, and 12 ml for ÄKTApurifier 100).

Fig 25. Frac-950

Optional

Fraction collector Frac-950

Frac-950 (Fig 25) offers two independent ways to prevent sample loss across the entire flow rate range of ÄKTAdesign systems, from 0.001 ml/min to 100 ml/min, and the highest flexibility in the choice of collection mode. Fractions are collected in microplates (over 384 fractions, up to 2.5 ml per fraction), a variety of test tube sizes, or in 20 large vessels (up to 250 ml per fraction) or even funnels for unlimited fraction size. Collection is in volume or time mode and different fraction sizes can be collected during different stages of a separation.

Automatic peak fractionation, based on peak detection using slope or level sensing, minimizes peak dilution and cross-contamination. Event marks correlate the fractions with the chromatogram. A recycle function enables collection from repetitive runs.
Further information: Please ask for Frac-950 Data File No. 18-1153-57.

Fraction collector Frac-901

Frac-901 fraction collector can collect up to 175 fractions in 12 mm diameter tubes, up to 95 fractions in 10–18 mm diameter tubes and up to 40 fractions in 30 mm diameter tubes.

Fixed volume fractionation or automatic peak fractionation is possible. Peak fractionation is based on peak detection using slope sensing. Fraction marks and fraction numbers make it easy to identify fractions and peaks.

Automatic multiple sample injection (large volumes or high throughput)

Sample Pump P-950, together with a motorized valve PV-908, is used for automatic multiple sample injection. The flow rate range (up to 50 ml/min), low pulsation and pressure specification (up to 1 MPa) allow rapid sample application directly onto a column or via a Superloop. Large sample volumes can be applied smoothly and safely. The pump is controlled by UNICORN and requires no calibration before use.

Autosampler A-900 is available with or without Peltier cooling option and increases system throughput by allowing automatic injection of up to 96 samples from standard vials or 160 samples from microvials. Control of the autosampler is through UNICORN control system.
For further information: Please ask for Data File No. 18-1152-89

Automatic column or buffer selection

Motorized 8-port valves can be used to select a specified column or buffer allowing automatic column, media or buffer scouting.

Increased security in programmed events

A maximum of three air sensors can be positioned within the system and controlled through UNICORN to increase security in programmed events. For example, UNICORN is programmed to ensure that a chromatographic elution begins only when the completion of sample application has been detected by an air sensor. Variable sample volumes are applied with no risk of air entering the system or column.

Flow control

Motorized valves INV-907, IV-908, or PV-908 can be added to allow additional programmable functions such as automated reverse flow through a column or flow diversion.

Flexibility in connecting external equipment

AD-900 is an analog/digital converter for connecting an external instrument to the UNICORN control system in an ÄKTAdesign system.

The module has one high-resolution analog input for monitoring e.g. pressure, UV monitor signals, or other signals available as voltage outputs.

System specifications

ÄKTApurifier 10

Flow rate range setting	0.001–10 ml/min
Pressure range	0–25 MPa

ÄKTApurifier 100

Flow rate range setting	0.01–100 ml/min
Pressure range	0–10 MPa
Conductivity range	1 µS/cm–999.9 mS/cm (RPC – IEX – HIC gradients)
pH range	2–12
Temperature range	4 °C–40 °C
Solvent compatibility	all commonly used chromatographic solvents
Size	500 mm × 460 mm × 620 mm (W × D × H)
Weight	75 kg

Operating data

P-903

Flow rate range	0.001–10 ml/min
Increment	0.001 ml/min
Pressure range	0–25 MPa (250 bar, 3625 psi)
Pressure limits	programmable upper and lower limit
Internal volume	< 600 µl/pump module
Viscosity	maximum 5cP

P-901

Flow rate range	0.01–100 ml/min
Increment	0.01 ml/min
Pressure range	0–10 MPa (100 bar, 1450 psi)
Pressure limits	programmable upper and lower limit
Internal volume	< 1800 µl/pump module
Viscosity	maximum 5cP

Monitor UV-900

Wavelength range	190–700 nm in step of 1 nm, 3 wavelengths simultaneously
Bandwidth	4 nm
Wavelength accuracy	± 2 nm
Wavelength reproducibility	± 0.01 nm
Linearity	< 2% deviation up to 2 AU at 260 nm with Uracil at pH 2
Noise* (at 230 nm)	$< 6 \times 10^{-5}$ AU
Drift (at 254 nm)	$< 2 \times 10^{-4}$ AU/h
Max. pressure	2 MPa (20 bar, 290 psi)

Monitor pH/C-900

Conductivity unit	
Conductivity range	1 µS/cm–999.9 mS/cm
Noise	±0.5% of full-scale calibrated range
pH unit	
pH range	0–14 (specifications valid between 2–12)
Accuracy	±0.1 pH unit, temperature compensated
Stability	max 0.1 pH units deviation/10 h

Fraction collection

With Frac-950	
Flow rate range	0.001 ml/min–100 ml/min
Fraction capacity	
Optional racks	
Rack A	120 × 18 mm tubes 8 × 30 mm tubes
Rack B	240 × 12 mm tubes
Rack C	4 microplates (4 × 96 wells per plate) 8 × 30 mm tubes
Rack D	45 × 30 mm tubes
Rack E	80 × 30 mm tubes
Rack F	20 × 250 ml vessels
Rack G	30 funnels
Prep Mode	Conversion Kit
With Frac-901	
Tube capacity	95 in Tube Rack 18 mm 40 in Tube Rack 30 mm (optional) 175 in Tube Rack 12 mm (optional)

* Measured with water at 1 ml/min, time constant 1 s, 10 mm flow cell.

Sample Pump P-950

Flow rate range	0.1–50 ml/min
Operating pressure	0–1.0 MPa
Viscosity	5 cP 10 cP at reduced flow rate

Autosampler

Sample capacity	96 standard vials (1.5 ml), 160 micro vials (0.5 ml)
Injection volume	5–1000 µl, flushed loop 1–500 µl, partial loop fill 1–470 µl, µl pick up
Injection valve switch time	<100msec
Precision	
Full loop injections	rsd ≤ 0.3%
Partial loopfill injections	rsd ≤ 0.5% for injection volumes > 5 µl
µl pick-up	rsd ≤ 1.0% for volumes > 5 µl
Sample viscosity	0–10 cP
Programming	through UNICORN control only
Dimensions	280 mm × 540 mm × 440 mm (W × D × H)

A-900 with cooling only

Cooling capacity	>11.5 °C below ambient temperature (T) for 16 °C <T <40 °C
Typical cooling times	34 min from 23 °C to 4 °C (at 45% relative humidity) 60 min from 32 °C to 4 °C (at 35% relative humidity)

Programming through UNICORN control only

A/D Converter AD-900

Voltage range	± 2V DC
Resolution	1 µV, 20 bit
Input impedance	≥ 1 MΩ
Accuracy	> ± 0.5 % or ± 0.05 mV
Max. input voltage	± 5 V
Power requirement	18–36 DC through the UniNet 2 connection
Dimensions incl. attachment (W x D x H)	45 x 175 x 85 mm
Weight	0.4 kg

Computer requirements

Pentium II/333 MHz or later (minimum Pentium/90 MHz)
One system: 64 Mb RAM (minimum 32 Mb)
Two or more systems: 92 Mb RAM (minimum 64 Mb)
1 Gb available hard disk(150 Mb to run UNICORN),
NTFS file system
Colour monitor, 1024 × 768 with 64 k colours
1 ISA slot/connected system
Mouse
CD-ROM drive
1.44 Mb (3.5²) diskette drive

Software requirements for UNICORN 4.0

Windows NT™ Workstation 4.0 + Service Pack 4 or later or Windows 2000.

Network requirements

Supported network cards:
3COM Etherlink III
Compaq™ Netelligent 10/100 TX Embedded UTP Controller
Compaq Integrated NetFlex-3 Controller
AMD PCNET PCI Ethernet Adapter (Integrated)
Novell™ NetWare™ version 4.50.819 or later, alternatively or Windows NT Server 4.0
A valid network connection

Ordering information

Product	Code No.
ÄKTApurifier 10 (fraction collector not included) Computer*	18-1400-00
ÄKTApurifier 100 (fraction collector not included) Computer*	18-1404-00

* Your local Amersham Biosciences representative will provide details of the fully installed computer to be supplied with the system.

Frac-950 fraction collector complete with Rack A	18-6083-00
OR	
Frac-901 fraction collector complete with 18 mm tube rack	18-1118-97
Increased automation: automatic column, media or buffer scouting	
Buffer selection	
Valve IV-908, including one UniNet cable (one valve for pump A)	18-1108-42
Column selection	
Valve PV-908, including one UniNet cable (2 valves required)	18-1108-41
Autosampler A-900	18-1116-61
OR	
Autosampler A-900, cooled version (both include 200 x 1.5 ml sample vials and caps)	18-1144-61
ÄKTAdesign XT kit (includes tubing and UNICORN analysis module)	18-6083-19
Sample Pump P-950	18-6083-01
Valve PV-908	18-1108-41
Increased security in programmed events – air sensors	
Air-900 control box, includes one UniNet 2 cable, (controls up to 3 air sensors)	18-1121-22
Purge valve (required for buffer inlet position only)	18-1126-33
Air sensor Air-925 (2.5 mm i.d.)	18-1121-24
Air sensor Air-912 (1.2 mm i.d.)	18-1121-23
Flow control e.g. for reverse flow, flow diversions (up to three valves of any type)	
INV-907, including one UniNet cable	18-1108-40
IV-908, including one UniNet cable	18-1108-42
PV-908, including one UniNet cable	18-1108-41
Sample application	
Superloop 10 ml (ÄKTAdesign), load 1–10 ml	18-1113-81
Superloop 50 ml (ÄKTAdesign), load 1–50 ml	18-1113-82
Superloop 150 ml, load 1–150 ml	18-1023-85
(requires union 1/16″ female – M6 male fitting, code no. 18-1112-57)	
Additional items	
UNICORN analysis module	18-1134-74
AD-900, including a UniNet cable 0.7 m, a Mini-DIN cable 1.5 m	18-1148-62

Related product literature

Product	Code No.
Data Files	
ÄKTA$_{FPLC}$™	18-1128-41
ÄKTAbasic Systems	18-1128-19
ÄKTAexplorer Systems	18-1124-09
Monitor UV-900	18-1111-17
Pump P-900 series	18-1119-49
Monitor pH/C-900	18-1111-19
ÄKTAprime	18-1136-91
UNICORN Control System	18-1111-20
Frac-950	18-1153-57
Autosampler A-900	18-1152-89
Application Notes	
Purification of peptides from natural sources	18-1119-52
Efficient isolation of protein fragments for structural analyses	18-1119-53
Purification of synthetic peptides	18-1119-51

to order:

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